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ABSTRACT

Message strategies relating to information about social problems such as drug abuse have been based on the assumption that exposure to relevant information via mass media will result in behavior modification. There is need, however, for scientific inquiry into methods of information acquisition and perceptual response to information. A two-part study in Connecticut was designed to utilize objective and subjective measurements of viewer response to public service drug abuse commercials. The first experiment provided comparative evaluations of the qualities of five television commercials according to their potency, conventionality, realistic qualities, predictability, and informational values. In the second experiment, galvanic skin response measurements were used to determine message-generated attention as subjects were looking at one of the commercials; this was followed by posttest ratings. Results indicated that "hard sell" messages against drug abuse use (threatening, emotional, or disturbing approaches) appear to be most reliable for measurement of viewer perception regardless of the amount of attention generated during the actual viewing period. Attention arousal is important as a determinant of communication-generated behavior but is not necessarily related to the receiver's perceptual response and degree of persuasion. (RN)

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The University of Connecticut
Communication Research Program

AN EXPERIMENTAL ANALYSIS OF REACTION TO FILMED DRUG ABUSE INFORMATION

by

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and William J. McEwen

June 1972

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DRUG ABUSE INFORMATION RESEARCH PROJECT

DAIR Report #8

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This report is one of a series of descriptive and predictive studies into the cognitive, affective and behavioral responses to drug abuse information. Project DAIR (Drug Abuse Information Research), proposes to define dimensions of information seeking and utilization that relate to drug abuse. Investigations in this series develop and implement the instrumentation for a methodology which includes surveys, experimental manipulations, field experiments and modeling. One goal of the series is the development of a stochastic behavioral model which allows the prediction of drug use behavior consequent to specified exposure from drug abuse information.

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A complete list of available DAIR Reports is provided on the inside back cover.

The communication specialist is frequently engaged in formulating message strategies with the intention of affecting the behavior(s) of specified sets of receivers. In the area of social problems such as drug abuse, these strategy applications have heretofore relied on the apparent assumption that exposure to "relevant" information (via mass media channels) will somehow result in more "rational" behavior choices (cf. Hanneman and McEwen, in press). While the validity of this assumption has, of course, been questioned (Etzioni, 1972), empirical assessment of message-generated effects in the social problem and drug abuse areas has not been attempted. The apparent need for scientific inquiry into the nature and extent of viewer response to "persuasive" mass media stimuli constitutes the basis for the present investigation. More specifically, this study is aimed at providing a preliminary examination of the relevant response factors associated with the processing of information which may ultimately determine behavioral impact. A pilot examination of this type would serve as an initial test of available methodologies and procedures and would thus provide a basis for expanded testing of communication strategies.

In attempting to formulate predictions of adopter or consumer reactions to innovations, both marketing and diffusion researchers have relied on informational and affective response measures as data input (e.g. Howard and Sheth, 1968; Rogers with Shoemaker, 1971; McEwen, in press). Apparent consensus among these theorists underscores the necessity of considering both measures of information acquisition and perceptual response (e.g., see Leavitt, 1970).

Information Acquisition Measures. Given that information is made available to an individual (potential receiver), a requisite

for any type of information-generated effect is attention to the message (Schramm and Roberts, 1971; Bakan, 1966). Theoretically, information gain (acquisition) is a direct function of message-generated uncertainty (Miller, 1951). According to Berlyne (1960), uncertainty about a message leads to autonomic arousal, hence facilitating exploration of the stimulus field. Such exploration decreases when information in the stimulus pattern (message) has been assimilated and uncertainty has thus fallen to some threshold level.

In order to index this potentially functional information search-generating property of a stimulus, measures of arousal have been employed. Berlyne (1961) relied upon galvanic skin response measures as one indicant of autonomic arousal. These measures were reported by Berlyne as varying directly with the surprisingness and novelty of the stimulus presented. In a more pertinent application of this research paradigm to the investigation of meaningful communication stimuli (televised scenes of violent action), Hanneman (1971) similarly used GSR measures as indices of message-produced arousal.

In addition to the physiological indices of information acquisition such as GSR, alternative questionnaire techniques have been applied to the measurement of information gain. These measures range from simple assessment of recognition and/or recall (such as are commercially provided by Gallup and Robinson and by Starch) to more complex indices of salience or "meaningfulness" of communication stimuli (e.g. the verbal involvement measure proposed by Krugman, 1966, and the response structure measure developed by Leavitt, 1968).

Perceptual Response Measures. A wide variety of indices of consumer/adopter evaluations have been used as guides to predict-

ing adoption behavior. These measures are typically based on some number of questionnaire scaling devices of varying complexity which are designed to tap aspects of perceptual response (Robertson, 1971).

Despite the problems involved one form of behavior in a specified environment on the basis of a different form of behavior (verbal behavior) in a different measurement environment (cf. Wicker, 1969), the potential utility of combinations of perceptual measures seems well documented. Wells (1964) reported that measures of affect (ratings) were better predictors of product sales than were measures of recall or recognition. Palda (1966), despite his disavowal of "stepwise" adoption/purchase models, has reported data which support the contention that certain evaluations are highly correlated with purchase behavior. Aggregate data reported by Assael and Day (1968) indicate the utility of evaluation measures for predicting <u>future</u> adoption behavior (sales). McEwen (in press) described a simulation model whose application suggests the apparent utility of purchase projections based in part on message-generated consumer perceptions of the product.

Of greater immediate relevance to examining drug abuse communication is the McEwen (1972) investigation of the relevant dimensions of perceptual response to televised drug abuse messages. Based on a factor analysis of respondent-generated descriptor terms, the author proposed an examination of four basic factors comprising viewer perceptions: relevant persuasion (factual; makes sense); negative evaluation (worthless; overdone); creative stimulation (unique; creative); hard sell (disturbing; emotional). In a follow-up study, McEwen and Wittbold (1972) employed these perceptual scales in assessing the "persuasiveness" of five messages (drug

abuse public service commercials). Resultant data indicated that the "hard sell" dimension was most discriminating with respect to the commercial stimuli tested and was also most reliable (5 component scales; reliability index of .87).

The present study was designed as an exploratory investigation utilizing both objective (galvanic skin response) and subjective (perceptual evaluation) measures of viewer response to public service drug abuse commercials. This research was therefore intended to provdie a preliminary examination, in two parts, of the range of responses exhibited by viewers in classroom and non-classroom settings, and also to allow for some initial comparisons among the various obtained measures of information acquisition and perceptual response.

Experiment #1: Comparative Evaluations

Methods and Procedures. The first study in this two part series was designed to provide comparative judgments of the informational quality of the five commercials. The study incorporated scalar measures and rankings of message-generated uncertainty (Hanneman, 1971) in order to examine the apparent predictability of the stimulus communications.

Stimuli: In order to afford some comparability with the earlier McEwen and Wittbold investigation, the same five commercial stimuli were employed. The commercials were as follows:

1. "LSD, the Wonder Drug" (60 sec.; NIMH)
2. "Bill Cosby: Speed Kills" (30 sec.; NIMH)
3. "The Truth About Marijuana" (60 sec.; NIMH)
4. "Bad Trip" (60 sec.; NIMH)
5. "Neighborhood Junkie" (30 sec.; NIMH)

All commercials were shown to respondents via standard Bell and Howell 16 mm sound projectors.

Measurement: The study employed a self-administered

questionnaire consisting of ten, seven-interval bipolar rating scales plus a question asking whether the stimulus message had ever been seen before. Six of the scales were selected to represent the "potency" dimension of meaning (Osgood, Suci and Tannenbaum, 1957): hard-soft; strong-weak; heavy-light; masculine-feminine; aggressive-nonaggressive; tenacious-yielding. In addition, bipolar scales to assess the conventionality, realistic quality, predictability and informativeness of the messages were included. End-points for the "potency" scales were randomly reflected and all scales were verbally anchored at each interval.

Procedures: Initially, six judges reviewed the five commercials and selected the point of apparent highest uncertainty (operationalized as that scene in the presented message where it seemed to be least possible to predict the contents and outcome of the rest of the commercial). Consensus was required in order for a scene to be identified as the point of maximum uncertainty, and in each instance, unanimous agreement was reached.

Subjects consisted of an intact class of 30 students in an introductory communication course at the University of Connecticut. The set of five messages was presented to the subjects twice. During the first showing, each commercial was stopped at the point of previously-judged maximum uncertainty and each subject was asked to predict what would happen in the next scene. Obtained responses were used primarily for diagnostic purposes and thus will not be presented.

Each subject then viewed the set of commercials again. After each message was re-presented, the projector was stopped and the subjects were asked to complete the commercial uncertainty scales. Also, after all messages had been shown for the second time and

uncertainty ratings were completed, subjects were requested to rank order the five commercials according to perceived predictability (from most to least predictability), amount of interest (most to least interesting), and complexity (most to least complex).

Results. Table 1 below lists the results of the scalar measures of the five commercials. Since the data are intended to be suggestive, statistical tests of results are not reported. Experiment 1 was designed to provide preliminary information regarding commercial performance (particularly perceived potency and uncertainty) and to serve as a prototype for more expanded inquiry. Obtained comparative rating data do suggest that commercial #4 ("Bad Trip") was seen as relatively powerful (hard; strong) and unconventional, while commercials #2 ("Bill Cosby") and #5 ("Neighborhood Junkie") were perceived as lower in potency. The latter commercial was also judges as least predictable. Rankings of the five messages further reinforce the lower predictability of #5 and the greater interest value in the more complex commercial #4. Commercial rating data show evidence of some response set/consistency bias in operation in that rankings on the basis of complexity, informativeness and predictability appeared to be essentially the same. Such would not have been the prediction based on information theory which, as discussed previously, would equate complexity and interest with a lack of predictability. Some similarity is noted with the McEwen and Wittbold (1972) data, however, in that the authors reported that "Bad Trip" was perceived as highest in "Hard Sell" (emotional; scary), while the "Bill Cosby" commercial was seen as low in "Hard Sell." The partial comparability of results in these two studies, conducted at different times and in different testing situations (absolute vs. comparative ratings)

provides, then, some argument for the utility of the data obtained.

Table 1.
about here

Experiment #2: Physiological Measures and Absolute Ratings

Methods and Procedures. In the second part of this set of pilot inquiries, thirty volunteer subjects, drawn from previously untested introductory communication students, viewed one of the five commercial messages (stimuli were the same as in experiment #1). Subjects were randomly assigned to commercial-viewing treatments (n ranging from 4 to 7 per message). Subjects viewed and responded to the stimulus film alone.

Upon arriving at the Speech Center for the experiment, subjects were greeted and seated in a simulated living-room type setting (seated in a comfortable upholstered chair with wide arm rests in a furnished, large room facing a movie screen. Subjects had been previously informed about the required physiological measurement and the lack of pain or shock-related discomfort which would ensue. After further attempting to put the subject at ease, electrodes were attached to the subject's fingers (first and third fingers of the left hand) with standard adhesive collars. Subjects' skin was slightly abraded prior to electrode positioning with electrode paste.

Base-line GSR measures were then obtained from each subject for four minutes in order to allow adaptation. Following this period, the selected commercial was shown, the electrodes subsequently detached, and subjects completed the posttest rating instrument. Subjects were then debriefed and thanked for their participation.

Measurement. Physiological measures were recorded by means of a Grass model 7B polygraph, utilizing the 7P1 low level DC preamplifier to index galvanic skin response. Beckman miniature Biotential Skin electrodes were applied to subjects' fingers.

The posttest rating instrument consisted of a number of descriptors selected from the four perceptual scales proposed by McEwen (1972): Relevant Persuasion (makes sense; honest; factual; educational; believable)
Negative Evaluation (worn out; overdone; dull; worthless; aggravating)
Creative Stimulation (different; unique; novel; original; creative)
Hard Sell (scary; threatening; disturbing; emotional; thought-provoking).

In addition, subjects completed several questions regarding their prior drug use (ever used drugs before? if "yes," what types?), sex, age, and previous familiarity with the commercial (ever seen this ad before?). The The 28-item questionnaire was entirely self-administered.

Results.

Arousal. Table 2 below reports the results of the physiological arousal measures obtained from the experimental subjects. Comparison of initial baseline scores for the five experimental conditions indicated no significant differences among groups. Two difference scores were then calculated on the basis of the continually-recorded data:

1. difference between baseline and "peak" (the previously-identified point of maximum message uncertainty).
2. difference between 10-second measure (obtained 10 seconds after the beginning of the ad) and "peak"

Preliminary comparisons among these measures were conducted via t-tests for independent groups. Both difference-score measures suggest the arousal generated by message #1 ("LSD") to have signi-

ficantly exceeded ($p<.05$) that generated by wither commercial #2 or #4 ("Bill Cosby" or "Bad Trip").

Table 2.
about here

Perceptual Responses. Table 3 lists obtained results in terms of the four perceptual factors employed in this study. No significant differences were obtained with respect to the Personal Relevance, Negative Evaluation or Creative Stimulation dimensions. In accord with results previously obtained by McEwen and Wittbold (1972), the Hard Sell factor proved most discriminating with regard to this set of five commercial messages. Individual comparisons via t-tests indicated that "Bad Trip" and "Neighborhood Junkie" were percieved as significantly more threatenting and emotional than was "Bill Cosby."

Table 3.
about here

Additional analyses were performed on two single rating scales included in the posttest for heuristic purposes (persuasive; effective). These analyses are reported in Table 4. Commercial #3 ("Truth About Marijuana") was perceived as significantly less persuasive and effective (t-test; $p<.05$) than wither "Bad Trip" or "LSD."

Table 4.
about here

Discussion

Since both studies were intended to be illustrative and exploratory rather than conclusive, interpretation of the implications of obtained results shold be cautious. The small sample size

(n of 4 to 7) incorporated in prototype experiment #2 further inhibits the establishment of reliable and generalizable results. Some preliminary conclusions may, however, be drawn. The "Hard Sell" (threatening; emotional) dimension of viewer response appears most reliable and sensitive to communication strategy differences of the types tested. The use of objectively-identifiable fear appeals in commercials such as "Bad Trip" are thus indeed manifested in viewer perceptions. Such perceptions are not, however, apparently tantamount to arousal. The use of fear or threat appeals seemingly does not in itself guarantee message-generated attention. Indices of attention seem to a large degree independent of viewer perceptions. Physiological arousal (in experiment #2) correlated as highly as .25 with only three perceptual scales: different (.251); aggravating (.258); scary (.261). There may be some actual as well as conceptual relationship between physiological arousal and "Creative Stimulation." Both sets of measures would assign maximum attention-generating potential to "LSD, the Wonder Drug" and minimal potential to "Bill Cosby: Speed Kills." More expanded testing would of course be necessary to establish any such correspondence more firmly.

The question remains, however, as to the desirability of high arousal. Obviously, as mentioned before, some amount of uncertainty-generation is necessary and functional. Still, as Leavitt (1970) has pointed out, arousal is insufficient in itself. The perceived personal utility (Freedman and Sears, 1965) and relevance to the viewer are at least as crucial a determinant of communication-generated behavior.

Insufficient sample size did not permit the subdivision of pilot study conditions on the basis of prior exposure to the mes-

sage or admitted prior drug use. Comparisons of user vs. non-user arousal and perceptual response differences could both serve as a partial validation of certian perceptual response categories (via a type of extreme-groups comparison) and, perhaps more importantly, serve as an analytic tool for identifying differentially-effective strategies for targetted subpopulations.

Summary

The present set of two pilot studies was intended to provide a preliminary examination of the dimensions and range of viewer perceptions as related to physiological arousal. Preliminary data supported earlier inquiry related to the sensitivity of the derived perceptual factors to message strategy differences. Data also suggested possible relationships between phsiological indicants of attention and certain subjective measures of perceived informativeness and stimulation quality.

Table 1.

Experiment #1.
Comparative Ratings and Rankings
(N=30)

Messages	Scales ($\bar{X}$)					Rankings ($\bar{X}$)		
	Potency (6)	Conventl	Infrmtv	Realstc	Predict	Complex	Inter.	Pred
"LSD"	25.1	4.6	3.7	5.5	5.1	3.3	2.9	3.1
"Cosby"	19.8	5.1	4.4	5.1	5.3	3.2	3.7	2.8
"Truth"	23.4	4.7	5.0	5.5	4.6	2.4	2.5	3.0
"Trip"	27.8	3.8	4.8	5.3	5.3	2.4	2.0	2.5
"Junkie"	17.1	4.5	3.7	4.8	4.1	3.8	3.8	3.6

Table 2.

Experiment #2.
Physiological Arousal Measures

Difference Measure	"LSD" (n=6)	"Cosby" (n=7)	"Truth" (n=6)	"Trip" (n=6)	"Junkie" (n=4)
1. base-peak ($\bar{X}$)	1.74	1.06	1.54	0.94	1.24
2. 10 sec-peak ($\bar{X}$)	1.21	0.28	0.47	0.42	0.70
	t-test results:		LSD > Cosby ($p<.05$); both measures LSD > Trip ($p<.05$); both measures		

Table 3.

Experiment #2.
Perceptual Factor Scores
(absolute ratings)

Factor Scores (each is sum of 5 scales)	"LSD" (n=7)	"Cosby" (n=7)	"Truth" (n=6)	"Trip" (n=6)	"Junkie" (n=4)	F test
Personal Relevance	19.29	16.43	17.33	21.33	17.75	0.85
Negative Evaluation	9.86	10.43	13.71	9.17	10.50	1.18
Creative Stimulation	14.43	10.43	12.83	12.50	12.75	0.68
Hard Sell	11.71	8.56	11.17	15.50	14.50	3.99*
	* $p<.05$ (df=4, 25)					

Table 4.

Experiment #2.
Individual Rating Scales
(absolute ratings)

Scales	"LSD" (n=7)	"Cosby" (n=7)	"Truth" (n=6)	"Trip" (n=6)	"Junkie" (n=4)
Persuasive	3.29	2.14	2.66	3.66	2.75
Effective	3.29	2.14	2.50	3.33	2.80
	t-test results:		Cosby<Trip ($p<.05$); both measures Cosby<LSD ($p<.05$); both measures		

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